



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

21186 7590 10/05/2009

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

FAULK, DEVONA E

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 10/05/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/051,757

01/16/2002

Eric A. Durant

899.056US1

5533

TITLE OF INVENTION: HEARING AIDS AND METHODS AND APPARATUS FOR AUDIO FITTING THEREOF

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/05/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

21186 7590 10/05/2009

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/051,757 01/16/2002 Eric A. Durant 899.056US1 5533

TITLE OF INVENTION: HEARING AIDS AND METHODS AND APPARATUS FOR AUDIO FITTING THEREOF

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/05/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
FAULK, DEVONA E	2614	381-312000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,757	01/16/2002	Eric A. Durant	899.056US1	5533
21186	7590	10/05/2009	EXAMINER	
SCHWEGMAN, LUNDBERG & WOESSNER, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			FAULK, DEVONA E	
			ART UNIT	PAPER NUMBER
			2614	
DATE MAILED: 10/05/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 772 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 772 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/051,757	DURANT, ERIC A.	
	Examiner	Art Unit	
	DEVONA E. FAULK	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 9/11/09.
2. ☒ The allowed claim(s) is/are 12-16,27-35 and 44-49.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|--|---|

DETAILED ACTION

Response to Remarks

1. The applicant has cancelled claims 1-4,9-11,20-26 in this amendment.
2. The applicant agreed to an examiner's amendment to place the remaining claims in allowable form.
3. Claims 1-11,17-26,36-43 are cancelled.
4. Claims 44-49 are new.

EXAMINER'S AMENDMENT

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Daniel J. Mertes (Reg. No. 55,842) on 9/29/09.

The claims are to be amended as follows:

Claim 32 is to be amended to recite the following:

A method of using a genetic algorithm in a ~~system~~ hearing aid having a first population of a plurality of parent sets, comprising the steps;
presenting a first pair of sets from the parent sets, the first pair comprising a first and second set, the genetic algorithm selecting which of the parent sets becomes the first and second set, the first pair being presented with assistance of the hearing aid;

Art Unit: 2614

indicating a preference to the genetic algorithm between the first and second sets of the first pair;

operating on at least one set of the plurality of parent sets with a genetic algorithm operator to obtain a child set, the child set being one of a mutation and crossover; replacing one of the plurality of parent sets of the first population with the child set to form a second population;

presenting a second pair, the second pair comprising the child set and a third set, the third set being selected from the second population but not being the child set, the genetic algorithm selecting which set of the second population becomes the third set; indicating a second preference to the genetic algorithm between the child set and the third set of the second pair; and

converging on a solution set, the solution set being one of the first, second, third and child sets.

Claim 34 is to be amended to recite the following:

A method of perceptually tuning a ~~system~~ hearing aid using a genetic algorithm, comprising the steps:

providing a system an initial setting;

preparing a population of a plurality of parent sets, each of the parent sets having at least one parent parameter;

presenting a first pair of sets from the parent sets, the first pair comprising a first and second set, the genetic algorithm selecting which of the plurality of parent sets becomes

Art Unit: 2614

the first and second set, the first pair being presented with assistance of the hearing aid;

indicating a first preference to the genetic algorithm between the first and second sets of the first pair;

presenting a second pair of sets from the parent sets, the second pair comprising a third and fourth set, the genetic algorithm selecting which of the plurality of parent sets becomes the third and fourth sets;

indicating a second preference to the genetic algorithm between the third and fourth sets of the second pair;

operating on one set of the plurality of parent sets with a genetic algorithm operator to obtain a child set, the child set being one of a mutation and crossover of the one set, the child set having at least one child parameter;

replacing one of the plurality of parent sets of the first population with the child set to form a second population;

presenting a third pair of sets, the third pair comprising the child set and a fifth set, the fifth set being selected from the second population but not being the child set, the genetic algorithm selecting which set of the second population becomes the fifth set;

indicating a third preference to the genetic algorithm between the child set and the fifth set;

converging on a solution set, the solution set being one of the first, second, third, fourth, fifth and child sets; and

updating the initial setting with one of the at least one parent and child parameters selected from the solution set.

Allowable Subject Matter

6. Claims 12-16,27-35m44-49 allowed.

The following is an examiner's statement of reasons for allowance: Regarding claims 12 ,27,31,32 and 34 prior art Weinfurter et al. (US 6,035,050) discloses a hearing aid comprising: a memory having parameters stored ;a toggle device (Figure 3; column 5,lines 1-7);a select indicator (50, Figure 3; column 5, lines 5-8); and a processor (46, Figure 5). Prior art Watanabe et al. (US 6,148,274) discloses an optimization adjusting method that uses a genetic algorithm (column 4, lines 42-65; column 42, lines 8-48; ranking data is implicit to how a genetic algorithm functions). Watanabe discloses using genetic algorithm and using mutation and crossover on at least one parent set (Watanabe, column 42, lines 8-48; Figures 67 and 69). Prior art Takagi et al. (US 7,343,021) discloses an optimum solution method, hearing aid fitting apparatus utilizing the optimum solution method and system of optimization adjusting method and apparatus. Prior art Hagen et al. (US 6,888,948) discloses a portable system programming hearing aids. Generally the prior art teaches of using genetic algorithms to provide optimization. Darrel Whitely discloses a genetic algorithm tutorial.

Regarding claim 12, the prior art or combination thereof fails to disclose or make obvious a select indicator for selecting a preferred one of the first and second set in the each of the plurality of pairs; a genetic algorithm for replacing one of the plurality of parent sets in the first population with the child set thereby forming a second population

Art Unit: 2614

wherein the toggle device toggles between another pair of sets, the another pair being selected from the second population in order to fit a hearing aid.

Regarding claim 27, the prior art or combination thereof fails to disclose or make obvious the first pair comprising a first and second set and being presented with assistance of the hearing aid; reselecting a first preference between the first and second sets of the first pair; presenting a second pair, the second pair comprising the child set and a third set, the third set being selected from the second population but not being the child set; selecting a second preference between the child set and the third set of the second pair in order to fit a hearing aid.

Regarding claim 31, the prior art or combination thereof fails to disclose or make obvious the first pair comprising a first and second set and being presented with assistance of the hearing aid; selecting a first preference between the first and second sets of the first pair; presenting a second pair of sets from the parent sets, the second pair comprising a third and fourth set; selecting a second preference between the third and fourth sets of the second pair; operating on one set of the plurality of parent sets to obtain a child set, the child set being one of a mutation and crossover of the one set, the child set having at least one child parameter; replacing one of the plurality of parent sets of the first population with the child set to form a second population; presenting a third pair of sets, the third pair comprising the child set and a fifth set, the fifth set being selected from the second population but not being the child set; selecting a third preference between the child set and the fifth set; converging on a solution set, the solution set being one of the first, second, third, fourth,

Art Unit: 2614

fifth and child sets; and updating the initial prescription with one of the at least one parent and child parameters in order to fit a hearing aid.

Regarding claim 32, the prior art or combination thereof fails to disclose or make obvious the first pair being presented with the assistance of a hearing aid, the genetic algorithm selecting which of the parent sets becomes the first and second set; indicating a preference to the genetic algorithm between the first and second sets of the first pair; replacing one of the plurality of parent sets of the first population with the child set to form a second population; presenting a second pair, the second pair comprising the child set and a third set, the third set being selected from the second population but not being the child set, the genetic algorithm selecting which set of the second population becomes the third set; indicating a second preference to the genetic algorithm between the child set and the third set of the second pair; and converging on a solution set, the solution set being one of the first, second, third and child sets in a hearing aid.

Regarding claim 34, the prior art or combination thereof fails to disclose or make obvious the first pair being presented with the assistance of a hearing aid, the genetic algorithm selecting which of the plurality of parent sets becomes the first and second set; indicating a first preference to the genetic algorithm between the first and second sets of the first pair; presenting a second pair of sets from the parent sets, the second pair comprising a third and fourth set, the genetic algorithm selecting which of the plurality of parent sets becomes the third and fourth sets; indicating a second preference to the genetic algorithm between the third and fourth sets of the second pair; operating on one set of the plurality of parent sets with a genetic

Art Unit: 2614

algorithm operator to obtain a child set, the child set being one of a mutation and crossover of the one set, the child set having at least one child parameter; replacing one of the plurality of parent sets of the first population with the child set to form a second population; presenting a third pair of sets, the third pair comprising the child set and a fifth set, the fifth set being selected from the second population but not being the child set, the genetic algorithm selecting which set of the second population becomes the fifth set; indicating a third preference to the genetic algorithm between the child set and the fifth set; converging on a solution set, the solution set being one of the first, second, third, fourth, fifth and child sets; and updating the initial setting with one of the at least one parent and child parameters selected from the solution set in order to tune a hearing aid.

Therefore, the prior art or combination thereof fails to disclose or make obvious an apparatus for fitting a hearing aid, a hearing aid, a method for fitting a hearing aid as claimed, a method of using a genetic algorithm in a system and a method of perceptually tuning a system using a genetic algorithm as claimed.

Claims 13-16, 28-30, 33,35 and 44-49 are allowed due to dependency on claims 12,27,32 and 34.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Primary Examiner, Art Unit 2614